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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/720,812	11/24/2003	Jung S. Kang	42P17606	5364

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EXAMINER
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MITCHELL, JAMES M

ART UNIT	PAPER NUMBER
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2813

MAIL DATE	DELIVERY MODE
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06/26/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/720,812

Applicant(s)

KANG ET AL.

Examiner

James M. Mitchell

Art Unit

2813

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 9-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_.
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

This office action is in response to applicant's election filed March 29, 2007.

#### ***Election***

Claims 1-8 and 25-42 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on March 29, 2007.

Applicant's election with traverse of species I drawn to an inductor in the reply filed on March 29, 2007 is acknowledged. The traversal is on the ground(s) that an inductor along with the other species resistor etc. are passive components. This is not found persuasive, because the claim drawn to a passive component has been indicated as generic, this has no bearing on the mutual exclusivity of an inductor compared to e.g. resistor. Because, examiner has satisfied the requirements set forth in MPEP 800, the requirement is still deemed proper and is therefore made FINAL.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an

Art Unit: 2813

application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 9-24 are rejected under 35 U.S.C. 102(e) as being anticipated by Ahn et al. (U.S. 6,833,285).

Ahn (Fig. 4) discloses:

(cl. 9, 17) a spacer assembly comprising: a thin-film passive element (106; Col. 7, Lines 45-48) integrated on a spacer (10) between upper and lower dies (20, 22) in stacked dies/plurality of stacked dies on a package substrate (Fig. 4); and conductors (126) attached to the passive element to connect the passive element to at least one of the upper and lower dies;

(cl. 10, 16, 18, 24) an upper adhesive layer (122) to attach the spacer to the upper die; and a lower adhesive layer (122) to attach the spacer and the thin-film passive element to the lower;

(cl. 11, 19) the thin-film passive element is placed between the spacer (e.g. portion above) and the lower adhesive layer (e.g. beneath inductor);

(cl. 12, 20) wherein the passive element has a thickness substantially less than thickness of the spacer (Fig. 4);

(cl. 13, 21) the passive element has a multi-turn geometry (spiral shape forms inductor; Col. 7, Lines 45-49);

(cl. 15, 23) the conductors comprises: bumps (126, 118) attached to the passive element to electrically connect the passive element to at least one of the upper and lower dies.

With respect to the range of inductance being between 1 nH to 10 nH, the claimed range does not impart patentability since it has been held that where the

Art Unit: 2813

general working conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233 (CCPA 1955).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 9-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pasch (U.S. 5,823,624) in combination with Ahn et al. (U.S. 6,833,285).

Pasch (Fig. 11b) discloses:

(cl. 9, 17) a spacer assembly comprising: a passive element (passive component

Art Unit: 2813

embedded in spacer; Col. 19, Lines 27-29) integrated on a spacer (1120) between upper and lower dies (1110,1130) in stacked dies/plurality of stacked dies on a package substrate (Fig. 11b); and conductors (11140a,b) attached to the passive element to connect the passive element to at least one of the upper and lower dies;

(cl. 10, 16, 18, 24) an upper adhesive layer (attach by epoxy or polymer; Col. 7, Lines 10-11) to attach the spacer to the upper die; and a lower adhesive layer to attach the spacer and the thin-film passive element to the lower;

(cl. 11, 19) the thin-film passive element is placed between the spacer (e.g. e.g. adhesive above and below spacer while passive component "embedded" in spacer)) and the lower adhesive layer;

(cl. 12, 20) wherein the passive element has a thickness substantially less than thickness of the spacer (e.g. embedded);

(cl.13, 21) the passive element has a multi-turn geometry (e.g. has inductor and therefore a multi-turn geometry; Col. 20, Line 5);

(cl. 15, 23) the conductors comprises: bumps (1140a,b) attached to the passive element to electrically connect the passive element to at least one of the upper and lower dies.

Pasch does not explicitly disclose that its inductor is a thin-film.

However, Ahn (item 106; Col. 7, Lines 45-48) utilizes a thin film forming an inductor.

It would have been obvious to one of ordinary skill in the art to form the inductor of Pasch as a thin film in order to embed the passive component in the

Art Unit: 2813

spacer/interposer as taught by Ahn (Fig. 4) and a required by Pasch (Col. 19, Lines 27-29).

With respect to the range of inductance being between 1 nH to 10 nH, the claimed range does not impart patentability since it has been held that where the general working conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233 (CCPA 1955).

### ***Response to Arguments***

Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M. Mitchell whose telephone number is (571) 272-1931. The examiner can normally be reached on M-F 8:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2813

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Ex. Mitchell, J.D.  
June 24, 2007